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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,093	09/29/2003	Prakash Kasiraj	HSJ920030172US1	2171
<div>7590      06/11/2007</div> <div>John L. Rogitz Rogitz &amp; Associates Suite 3120 750 B Street San Diego, CA 92101</div> <div>EXAMINER WILLHITE, TYLER C</div> <div>ART UNIT      PAPER NUMBER</div> <div>2189</div> <div>MAIL DATE      DELIVERY MODE</div> <div>06/11/2007      PAPER</div>				

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/674,093

Applicant(s)

KASIRAJ ET AL.

Examiner

Tyler Willhite

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 9/29/2003; 3/21/2005
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statements filed on 29 September 2003 and 21 March 2005 are in compliance and have been considered by the examiner.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the error correction code system set forth in claim 28 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

3. Claim 28 is objected to because of the following informalities: grammatical error. Appropriate correction is required.

On line 5 of claim 28, "operating" should read as "operation".

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 5-7, 9, 11-13, 15-17, 20, 21, and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. (US PGPub 2002/0071198, hereafter Liu).

6. Regarding claim 1, Liu shows a hard disk drive (HDD) comprising:  
at least one rotatable disk (page 3, right hand column, lines 26-28);

at least one write element (transducer) configured for writing data to the disk (page 3, right hand column, lines 28-30) in tracks, wherein at least two contiguous tracks establish a band (plurality of adjacent tracks written together) (page 6, left hand column, lines 35-52); and

at least one HDD controller controlling the write element (page 7, paragraph 73), the controller causing no more than one of: a single audio video (AV) data stream (one write of a sequential stream of audio video data fills one band [data block]) (page 6, right hand column, lines 20-27), and a single data file (data other than audio visual data can be stored in the same manner of filling multiple adjacent tracks with one sequential write) (page 6, paragraph 64), to be written to a band.

7. Regarding claim 2, Liu shows that at least some bands include at least three contiguous tracks (figure 13 and paragraph 68).

8. Regarding claim 3, Liu teaches that the tracks concentric to each other (page 6, left hand column, lines 40-45).

9. Regarding claim 5, Liu discloses that a first band has a first number of tracks and a second band has a second number of bands different from the first (number of tracks per band [block] can be change depending on use) (page 6, right hand column, lines 31-37).

10. Regarding claim 6, Liu shows that isolated tracks (tracks with conventional track-to-track spacing) are used to store data requiring random write access and bands (tracks with condensed track-to-track spacing wherein multiple tracks are written

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sequentially) are used to store data requiring sequential write access (page 6, paragraph 67).

11. Regarding claim 7, Liu teaches that at least one band contains data from one and only one audio video (AV) data stream (one write of sequential AV data per band [block]) (page 6, paragraph 68).

12. Regarding claim 9, Liu shows that at least some tracks are shingled (track-to-track spacing equal to read transducer width) (page 6, left hand column, lines 35-52).

13. Regarding claim 11, Liu discloses a data storage system comprising:

at least one data storage disk (page 7, paragraph 73);

at least one write element (write transducer) configured for writing data to the disk (page 7, paragraph 73);

at least one controller controlling the write element (page 7, paragraph 73) to write data onto the disk at least in bands [data blocks] (page 6, paragraph 68), each band containing no more than one AV data stream (one write of a sequential stream of audio video data fills one band [data block]) (page 6, right hand column, lines 20-27), or one data file (data other than audio visual data can be stored in the same manner of filling multiple adjacent tracks with one sequential write) (page 6, paragraph 64), each band being established by at least two contiguous data tracks (page 6, right hand column, lines 21-24).

14. Regarding claim 12, Liu shows that at least some tracks are shingled (track-to-track spacing equal to read transducer width) (page 6, left hand column, lines 35-52).

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15. Regarding claim 13, Liu shows that at least some bands include at least three contiguous tracks (figure 13 and paragraph 68).

16. Regarding claim 15, Liu discloses that a first band has a first number of tracks and a second band has a second number of bands different from the first (number of tracks per band [block] can be change depending on use) (page 6, right hand column, lines 31-37).

17. Regarding claim 16, Liu shows that isolated tracks (tracks with conventional track-to-track spacing) are used to store data requiring random write access and bands (tracks with condensed track-to-track spacing wherein multiple tracks are written sequentially) are used to store data requiring sequential write access (page 6, paragraph 67).

18. Regarding claim 17, Liu teaches that at least one band contains data from one and only one audio video (AV) data stream (one write of sequential AV data per band [block]) (page 6, paragraph 68).

19. Regarding claim 20, Liu shows a hard disk drive comprising:

disk storage means for holding data (page 7, paragraph 73) in bands (data blocks) (page 6, paragraph 68);

means for writing data to the disk storage means (write transducer) (page 7, paragraph 73); and

means for controlling the means for writing (controller) (page 7, paragraph 73) such that data from one of: a single audio video (AV) data stream (one write of a sequential stream of audio video data fills one band [data block]) (page 6, right hand

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column, lines 20-27), and a single data file (data other than audio visual data can be stored in the same manner of filling multiple adjacent tracks with one sequential write) (page 6, paragraph 64), is written to a band on the disk storage means.

20. Regarding claim 21, Liu teaches that the means for controlling causes the means for writing to write shingled tracks (adjacent tracks with track-to-track spacing equal to the width of the read transducer) (page 6, left hand column, lines 35-52).

21. Regarding claim 23, Liu discloses that a first band has a first number of tracks and a second band has a second number of bands different from the first (number of tracks per band [block] can be change depending on use) (page 6, right hand column, lines 31-37).

22. Regarding claim 24, Liu shows that the disk storage means is partitioned into isolated tracks (tracks with conventional track-to-track spacing) and bands of tracks (tracks with condensed track-to-track spacing wherein multiple tracks are written sequentially) (page 6, paragraph 67).

23. Regarding claim 25, Liu teaches that audio video (AV) data is stored in at least one band (data block) (page 6, paragraph 68).

24. Claim 28 is rejected under 35 U.S.C. 102 as being anticipated by Asano et al. (US PGPub. 2003/0147167, hereafter Asano).

25. Regarding claim 28, Asano shows a hard disk drive comprising:  
means for writing data to a disk (transducer) (page 2, paragraph 26);  
means for computing error correction code parity on written data (ECC codewords calculated for each sector written) (pages 2-3, paragraphs 27-28);



means for controlling the means for writing such that error correction code parity from a first write operation is used to generate error correction code parity for a second write operation subsequent to the first write operation (error correction code generated for an ECC block of N sectors is calculated using the codewords for each of the N sectors upon the Nth sector being written) (page 8, paragraph 108).

***Claim Rejections - 35 USC § 103***

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

27. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

28. Claims 4, 14, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1, 11, and 21 above, and further in view of Payne et al. (US Pat. 6,212,047, hereafter Payne).

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29. Regarding claims 4 and 14, Liu teaches all the limitations of claims 1 and 11 as shown above, but Liu does not show the write element being configured for perpendicular recording.

Payne shows a magnetic disk system wherein the write element is configured for perpendicular recording (column 3, lines 45-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the configuration of the write element for perpendicular recording as taught by Payne in the disk system of Liu in order to achieve high density storage with good stability on magnetic disk storage (Payne, column 2, lines 3-11).

30. Regarding claim 22, Liu teaches all the limitations of claim 21 as shown above, but Liu does not show the means for writing being configured for perpendicular recording.

Payne shows a magnetic disk system wherein the write element is configured for perpendicular recording (column 3, lines 45-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the configuration of the write element for perpendicular recording as taught by Payne in the disk system of Liu in order to achieve high density storage with good stability on magnetic disk storage (Payne, column 2, lines 3-11).

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31. Claims 8, 18, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 7, 17, and 25 above, and further in view of Wei Loon et al. (US PGPub. 2002/0059276, hereafter Wei Loon).

32. Regarding claims 8 and 18, Liu teaches all the limitations of claims 7 and 17 as shown above but does not show the use of AV transaction blocks.

Wei Loon discloses a disk system with AV transaction blocks (cluster or block for storing audio/video data on the disk drive) wherein the size of partitions of the disk for storing the data of individual AV streams is larger than the size of an AV transaction block (partition composed of multiple AV transaction blocks) (page 3, paragraph 46), the transaction block size being larger than a sector size (block size based on buffer size, wherein buffers are used to regulate the transfer rates of AV data streams [page 2-3, paragraph 29]) (page 3, paragraph 33).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to segment the bands of Liu into AV transaction blocks as taught by Wei Loon in order to fill AV data buffers quickly allowing more time for other operations using the disk drive (Wei Loon, page 3, paragraph 33).

33. Regarding claim 26, Liu teaches all the limitations of claims 25 as shown above but does not show the use of AV transaction blocks.

Wei Loon discloses a disk system with AV transaction blocks (cluster or block for storing audio/video data on the disk drive) wherein the size of partitions of the disk for storing the data of individual AV streams is larger than the size of an AV transaction block (partition composed of multiple AV transaction blocks) (page 3, paragraph 46), the

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transaction block size being larger than a sector size (block size based on buffer size, wherein buffers are used to regulate the transfer rates of AV data streams [page 2-3, paragraph 29]) (page 3, paragraph 33).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to segment the bands of Liu into AV transaction blocks as taught by Wei Loon in order to fill AV data buffers quickly allowing more time for other operations using the disk drive (Wei Loon, page 3, paragraph 33).

34. Claims 10, 19, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu as applied to claims 1, 11, and 21 above, and further in view of Tomita et al. (US Pat. 6,449,607, hereafter Tomita).

35. Regarding claims 10, 19, and 27, Liu teaches all the limitations of claims 1, 11, and 21 as shown above but does not show recording associations between files and the locations where the files are stored on the disk.

Tomita teaches a disk system wherein, for files and records (objects) (column 3, lines 66-67 through column 4, lines 1-5), a control element stores a list of physical locations on the disk associated therewith (column 10, lines 18-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the listing of physical locations associated with logical data structures by the controller as taught by Tomita in disk system with bands of Liu such that the bands associated with files and AV data streams are recorded by the control unit of the disk in order to allow for direct communication with

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the disk without the intervention of a host computer (Tomita, column 1, lines 41-44 and column 2, lines 40-52).

### ***Conclusion***

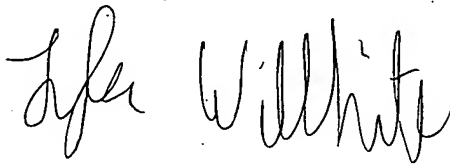
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Demura et al. (US Pat. 6,357,030) teaches generating error correction code (ECC) parity data for a version of an ECC block modified by a current write operation by using previously stored ECC parity data .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tyler Willhite whose telephone number is 571-270-1175. The examiner can normally be reached on 7:30am - 5pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on 571-272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

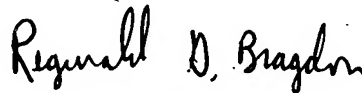
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Tyler Willhite  
Examiner  
Art Unit 2189

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June 6, 2007



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